TROPICAL RAINFALL MEASURING MISSION

April 3, 2000 - April 9, 2000
DOY 094 - 100
Day of Mission 858 - 864

TRMM MISSION OPERATIONS

- TRMM is flying in the -X Forward direction as of 00-091, at 05:12:21z.
- Yaw maneuver #40 is scheduled for April 20th (00-111).
- Delta-V maneuver #182 is scheduled for April 11th (00-102), using the ISP thrusters.
- The Beta angle range for 00-101 through 00-107 is -26.4° to -14.9°, peaking at -26.6° on 00-101.
- The next Monthly Status Review is scheduled for May 3rd (00-124).
- The next CCB meeting is scheduled for April 10th (00-101).

TRMM SUBSYSTEM OPERATIONS

Attitude Control System (ACS)

Delta-V maneuver #178 was successfully conducted on 00-094 at 19:24:25z and 20:10:12z for durations of 47.375 and 28.875 seconds respectively, using the ISP thrusters. The off-modulation of the -Pitch thruster (#6) for burn 1 and 2 was 38.3% and 39.8% (61.7% and 60.2% on time). The remaining fuel is 602.810 kg, and the final apogee and perigee height is 354.76 km x 347.54 km.

Maneuver #178 was originally scheduled for 00-094, but was then pushed back to 00-095 by FDF. There was a high level of solar activity, however, which would have temporarily dropped the spacecraft below the altitude for nominal science collection activities. FDF contacted the FOT and the maneuver was rescheduled on 00-094 for later that afternoon to stay within the box.

Delta-V maneuver #179 was successfully conducted on 00-096 at 15:55:35z and 16:41:25z for durations of 39.000 and 18.500 seconds respectively, using the ISP thrusters. The off-modulation of the -Pitch thruster (#6) for burn 1 and 2 was 59.9% and 65.5% (40.1% and 34.5% on time). The remaining fuel is 601.480 kg, and the final apogee and perigee height is 355.03 km x 347.34 km.

Delta-V maneuver #180 was successfully conducted on 00-098 at 14:58:58z and 15:44:44z for durations of 32.875 and 22.250 seconds respectively, using the ISP thrusters. The off-modulation of the -Pitch thruster (#6) for burn 1 and 2 was 35.7% and 36.0% (64.3% and 64.0% on time). The remaining fuel is 599.764 kg, and the final apogee and perigee height is 354.65 km x 347.00 km.

The TRMM Daily EPV failed the 50 km continuity check at the nominal 20:00z propagation start time (ER #166) on 00-099. FDF notified the FOT previously that this was a possibility due to a large geomagnetic storm which was not accounted for in the original ephemeris product

generation. The standard procedure of temporarily widening the limits from 50 km to 300 km by uplinking a modified ACS System Table 85 was used and the new vector began propagating at 22:00z.

Delta-V maneuver #181 was successfully conducted on 00-100 at 15:40:48z and 16:26:31z for durations of 39.875 and 30.250 seconds respectively, using the ISP thrusters. The off-modulation of the -Pitch thruster (#6) for burn 1 and 2 was 38.6% and 39.3% (61.4% and 60.7% on time). The remaining fuel is 598.145 kg, and the final apogee and perigee height is 354.88 km x 347.48 km.

Flight Data System (FDS)/Command & Data Handling (C&DH)

The frequency standard value is x'78A' with a current drift rate of -3.7 µs/hr. On 00-097 at 23:35:42z, the UTCF was adjusted by -923 µs. The new UTCF is 31535996.846599 seconds with a current drift value of -278 µs.

EDAC multi-bit errors occurred on 00-094 at 05:01:59z and 00-096 at 08:56:44z.

Q-channel restarts occurred on 00-094 at 19:07:16z, 00-096 at 14:08:32z and 20:42:54z, and on 00-099 at 02:11:55z and 14:45:26z.

The flywheel dwell incremented on 00-097 at 17:03:41z; the current value is 288 (x'120').

Reaction Control Subsystem (RCS)

The RCS subsystem performed nominally during this period. See the ACS section for specific Delta-V information.

Power Subsystem

The Power subsystem is operating nominally.

Electrical Subsystem

The Electrical subsystem operated nominally during this period.

Thermal Subsystem

The Thermal subsystem operated nominally during this period.

Deployables Subsystem

The Deployables subsystem performed nominally during this period.

RF/Communications Subsystem

The RF/Communications subsystem performed nominally during this period.

SPACECRAFT INSTRUMENTS

CERES

The LaRC team has recently documented noise in the instrument science data, which began on March 17th (00-077). The LaRC team did not notice the noise until March 23rd, when it was large enough to be flagged in the ground processing of the science data. The noise has been gradually increasing since then and has started to cause bridge balance resets (total, longwave, and shortwave), which was first observed in real-time on 00-095 (AR #80). These resets appear to occur most frequently at orbit sunset (sunlight going to eclipse), and there also appears to be a diurnal pattern to the frequency of the resets.

Because the science data is replaced with fill data during these resets and is therefore invalid, the LaRC team has begun to research ways to reduce the frequency, and therefore the impact, of these resets. As a first step to help reduce the frequency of the bridge balance resets, the LaRC team has asked TRW to build a special microprocessor load to redefine the Normal scan range. The new load was tested with the simulator on 00-098 and uplinked to the spacecraft later that day, at 20:37z. The LaRC team has reported that the load has reduced the frequency of the resets, but further analysis is required to determine to what extent the new load has helped. The source of the noise which causes the resets is still under investigation.

LIS

LIS performed nominally during this time period.

PR

PR performed nominally during this time period.

The list of Internal Calibration times over Australia in which PR was not radiating is below:

2000/094:15:45:20 - 15:50:23z
2000/094:22:15:51 - 22:18:04z
2000/095:22:37:42 - 22:39:51z
2000/096:14:56:30 - 14:58:51z
2000/096:21:26:46 - 21:28:59z
2000/097:21:49:30 - 21:51:38z
2000/098:20:38:00 - 20:40:11z
2000/099:12:57:07 - 13:00:47z
2000/099:21:00:50 - 21:02:57z
2000/100:19:49:05 - 19:51:15z

TMI

TMI performed nominally during this time period.

VIRS

VIRS performed nominally during this time period.

GROUND SYSTEM

String 1 is scheduled for a quarterly security scan on 00-101 to complete the MOC verification.

Event Reports

ER #166: Daily EPV failed 50 km Continuity (see ACS section).

Generic Late Acquisition Reports (for TTRs 19639)

No new Generic Late Acquisitions occurred during this period.

New Anomaly

AR #80 - CERES Bridge Balance Resets due to Increased Noise Levels (see CERES section).

Recurring Open Anomalies

No Open Anomalies recurred during this period.

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